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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/684,221	10/02/2003	Kenji Yamagami	16869B-036610US	7117

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EXAMINER	
SIDDIQI, MOHAMMAD A	
ART UNIT	**PAPER NUMBER**
2154	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

MN

Office Action Summary	Application No.	Applicant(s)	
	10/684,221	YAMAGAMI ET AL.	
	Examiner	Art Unit	
	Mohammad A. Siddiqi	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *06/01/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-20 were examined.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beardsley et. al. (6,304,980) (hereinafter Beardsley) in view of Armangau et. al. (6,434,681) (hereinafter Armangau).

4. As per claim 1, Beardsley discloses a method for handling a remote copy request in a distributed storage system, the method comprising:

providing a plurality of primary volumes within a primary storage system that is coupled to a primary host via a first network (114, fig 1, col 7, lines 31-59), the primary storage system (115, fig 1) being coupled to a

secondary storage system via a second network (114, 115, fig 1, col 7, lines 31-59);

selecting a first path group from one or more path groups that could be used to transmit the request (108,111, fig 1, col 13, lines 1-5, lines 54-67); and

transmitting the first request to the secondary storage system using the first path group (108,111, fig 1, col 13, lines 54-67), the secondary storage system including a plurality of secondary volumes that are paired 9col 16, line 57) to the plurality of primary volumes (108,111, fig 1, col 13, 1-5, lines 54-67).

Beardsley teaches synchronous and asynchronous remote copy for disaster recovery, where the primary storage system communicates with secondary storage system via multiple links. Breadsley does not explicitly teach selecting a first request from a plurality of requests placed in a queue based on priority information associated with the requests. However, Armangau teaches selecting a first request from a plurality of requests placed in a queue based on priority information associated with the requests (col 19, line 27-64). It would have been obvious to one having ordinary skill in the art to incorporate the processing of data transfer request using queue taught by Armangau into the system of the Beardsley to achieve the predictable

result of remotely copying the data from the primary storage system to the secondary storage system.

5. As per claim 2, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses wherein each of the primary volumes is assigned a priority (volumes are serialized, col 16, lines 32-45).

6. As per claim 3, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses wherein all requests received from the primary host and to be directed to a given primary volume are assigned the same priority (duplex pair, col 16, lines 32-67).

7. As per claim 4, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses receiving a second request at the primary storage system from the primary host (col 16, lines 32-45); identifying a primary volume to which the second request is directed (col 16, lines 32-45); determining the priority of the primary volume to which the second request is directed (reserve during the swap, col 16, lines 32-45); and assigning the same priority to the second request as the priority of the primary volume to which the second request is directed, wherein the first request and the second request are the same request (volumes are

serialized, col 16, lines 32-47).

8. As per claim 5, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses wherein the primary storage system includes a path selection table that is accessed to determine the priority of the primary volume (fig 4, col 11, line 39 to col 12, line 63).

9. As per claim 6, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses wherein the path selection table associates each of the primary volumes with one or more path groups and a priority value (PGID, 108,111, fig 1, col 13, lines 1-5, lines 54-67).

10. As per claim 7, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses wherein the primary storage system maintains a path selection table and a path group table, the path selection table associating each of the primary volumes with one or more path groups and a priority value, the path group table associating each path group with one or more ports (fig 4, col 11, line 39 to col 12, line 63).

11. As per claim 8, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses wherein the path group table

associates each path group with a given constraint (data transfer rates, fig 4, col 11, line 39 to col 12, line 63).

12. As per claim 9, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses selecting a port from one or more ports associated with the selected path group (fig 4, col 11, line 39 to col 12, line 63).

13. As per claim 10, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses determining whether or not a constraint defined for the first path group is satisfied (data transfer rates, fig 4, col 11, line 39 to col 12, line 63); selecting second path group from the one or more path groups that could be used to transmit the request if the constraint is not satisfied (data transfer rates, fig 4, col 11, line 39 to col 12, line 63); and selecting a port from one or more ports associated with the first path group if the constraint is satisfied (data transfer rates, fig 4, col 11, line 39 to col 12, line 63).

14. As per claim 11, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses wherein the first path group is preferred over the second path group in transmitting the first request (col

12, lines 20-30).

15. As per claim 12, the claim is rejected for the same reasons as claim 1, above. In addition, Armangau discloses receiving a plurality of requests at a primary storage system from one or more primary hosts (col 6, lines 1-29),

the primary storage system having a plurality of primary volumes (col 1, lines 65-67);

sorting the requests according to priority assigned to the requests (col 19, line 27-64);

retrieving one of the requests that have been sorted (col 19, line 27-64);

16. As per claim 13, the claim is rejected for the same reasons as claim 1, above. In addition, Beardsley discloses wherein the requests are assigned priority according to the primary volumes to which they are associated (volumes are serialized, col 16, lines 32-47).

17. As per claim 14, the claim is rejected for the same reasons as claim 1, above. In addition, Armangau discloses wherein the path selection table maintains priority information for each of the plurality of primary volumes

(col 19, line 27-64).

18. As per claim 15, the claim is rejected for the same reasons as claim 1, above.

19. As per claim 16, the claim is rejected for the same reasons as claim 1, above. In addition, Armangau discloses wherein the plurality of primary volumes are provided with a plurality of priority values, wherein the requests received at the primary storage system are assigned priority values that corresponds to the priority values of the primary volumes to which the requests are associated (col 19, line 27-64).

20. As per claims 17-20, the claim is rejected for the same reasons as claims 1- 12, above.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent 6,728,849

U.S. Patent 7,096,269

U.S. Patent 6,629,264

U.S. Patent 6,295,575

U.S. Patent 5,987,621

U.S. Patent 6,684,306

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad A. Siddiqi whose telephone number is (571) 272-3976. The examiner can normally be reached on Monday -Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JOHN FOLLANSBEE
SUPERVISORY PATENT EXAMINER
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MAS